SEQUENCE LISTING

<110> LOCOMOGENE, INC.

<120> THERAPEUTIC PREPARATION FOR HEMATOPOIETIC DISEASE

<130> BHP-A0301P

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<150> US 60/495,001

<151> 2003-08-13

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<170> PatentIn Ver. 2.0

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gattttcttg ccacagcatc cattctggtt aggctggtga tcttctgagt agtgatagat 180

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ggtggcgtct agagcagcat gggacaggtg ggtaagggga gtcttctcat tatgcagaag 300

tgatcaactt aaatctctgt cagatctacc tttatgtagc ccggcagtcg cgcggattga 360

gcgggctcgc ggcgctgggt tcctggtctc cgggccaggg ca atg ttc cgc acg      414
                                              Met Phe Arg Thr
                                               1


gca gtg atg atg gcg gcc agc ctg gcg ctg acc ggg gct gtg gtg gct      462
Ala Val Met Met Ala Ala Ser Leu Ala Leu Thr Gly Ala Val Val Ala
 5                  10                  15                  20


cac gcc tac tac ctc aaa cac cag ttc tac ccc act gtg gtg tac ctg      510
His Ala Tyr Tyr Leu Lys His Gln Phe Tyr Pro Thr Val Val Tyr Leu
              25                  30                  35

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acc aag tcc agc ccc agc atg gca gtc ctg tac atc cag gcc ttt gtc   558
Thr Lys Ser Ser Pro Ser Met Ala Val Leu Tyr Ile Gln Ala Phe Val
            40                  45                  50


ctt gtc ttc ctt ctg ggc aag gtg atg ggc aag gtg ttc ttt ggg caa   606
Leu Val Phe Leu Leu Gly Lys Val Met Gly Lys Val Phe Phe Gly Gln
        55                  60                  65


ctg agg gca gca gag atg gag cac ctt ctg gaa cgt tcc tgg tac gcc   654
Leu Arg Ala Ala Glu Met Glu His Leu Leu Glu Arg Ser Trp Tyr Ala
        70                  75                  80


gtc aca gag act tgt ctg gcc ttc acc gtt ttt cgg gat gac ttc agc   702
Val Thr Glu Thr Cys Leu Ala Phe Thr Val Phe Arg Asp Asp Phe Ser
  85                  90                  95                 100


ccc cgc ttt gtt gca ctc ttc act ctt ctt ctc ttc ctc aaa tgt ttc   750
Pro Arg Phe Val Ala Leu Phe Thr Leu Leu Leu Phe Leu Lys Cys Phe
                105                 110                 115


cac tgg ctg gct gag gac cgt gtg gac ttt atg gaa cgc agc ccc aac   798
His Trp Leu Ala Glu Asp Arg Val Asp Phe Met Glu Arg Ser Pro Asn
        120                 125                 130


atc tcc tgg ctc ttt cac tgc cgc att gtc tct ctt atg ttc ctc ctg   846
Ile Ser Trp Leu Phe His Cys Arg Ile Val Ser Leu Met Phe Leu Leu
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              135                    140                    145


ggc atc ctg gac ttc ctc ttc gtc agc cac gcc tat cac agc atc ctg    894
Gly Ile Leu Asp Phe Leu Phe Val Ser His Ala Tyr His Ser Ile Leu
    150                    155                    160


acc cgt ggg gcc tct gtg cag ctg gtg ttt ggc ttt gag tat gcc atc    942
Thr Arg Gly Ala Ser Val Gln Leu Val Phe Gly Phe Glu Tyr Ala Ile
165                    170                    175                    180


ctg atg acg atg gtg ctc acc atc ttc atc aag tat gtg ctg cac tcc    990
Leu Met Thr Met Val Leu Thr Ile Phe Ile Lys Tyr Val Leu His Ser
                    185                    190                    195


gtg gac ctc cag agt gag aac ccc tgg gac aac aag gct gtg tac atg    1038
Val Asp Leu Gln Ser Glu Asn Pro Trp Asp Asn Lys Ala Val Tyr Met
                    200                    205                    210


ctc tac aca gag ctg ttt aca ggc ttc atc aag gtt ctg ctg tac atg    1086
Leu Tyr Thr Glu Leu Phe Thr Gly Phe Ile Lys Val Leu Leu Tyr Met
                    215                    220                    225


gcc ttc atg acc atc atg atc aag gtg cac acc ttc cca ctc ttt gcc    1134
Ala Phe Met Thr Ile Met Ile Lys Val His Thr Phe Pro Leu Phe Ala
                    230                    235                    240
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atc cgg ccc atg tac ctg gcc atg aga cag ttc aag aaa gct gtg aca     1182
Ile Arg Pro Met Tyr Leu Ala Met Arg Gln Phe Lys Lys Ala Val Thr
245                250              255              260


gat gcc atc atg tct cgc cga gcc atc cgc aac atg aac acc ctg tat     1230
Asp Ala Ile Met Ser Arg Arg Ala Ile Arg Asn Met Asn Thr Leu Tyr
             265              270              275


cca gat gcc acc cca gag gag ctc cag gca atg gac aat gtc tgc atc     1278
Pro Asp Ala Thr Pro Glu Glu Leu Gln Ala Met Asp Asn Val Cys Ile
             280              285              290


atc tgc cga gaa gag atg gtg act ggt gcc aag aga ctg ccc tgc aac     1326
Ile Cys Arg Glu Glu Met Val Thr Gly Ala Lys Arg Leu Pro Cys Asn
             295              300              305


cac att ttc cat acc agc tgc ctg cgc tcc tgg ttc cag cgg cag cag     1374
His Ile Phe His Thr Ser Cys Leu Arg Ser Trp Phe Gln Arg Gln Gln
             310              315              320


acc tgc ccc acc tgc cgt atg gat gtc ctt cgt gca tcg ctg cca gcg     1422
Thr Cys Pro Thr Cys Arg Met Asp Val Leu Arg Ala Ser Leu Pro Ala
325                330              335              340


cag tca cca cca ccc ccg gag cct gcg gat cag ggg cca ccc cct gcc     1470
Gln Ser Pro Pro Pro Pro Glu Pro Ala Asp Gln Gly Pro Pro Pro Ala

                    345                    350                    355


ccc cac ccc cca cca ctc ttg cct cag ccc ccc aac ttc ccc cag ggc     1518
Pro His Pro Pro Pro Leu Leu Pro Gln Pro Pro Asn Phe Pro Gln Gly
              360                    365                    370


ctc ctg cct cct ttt cct cca ggc atg ttc cca ctg tgg ccc ccc atg     1566
Leu Leu Pro Pro Phe Pro Pro Gly Met Phe Pro Leu Trp Pro Pro Met
              375                    380                    385


ggc ccc ttt cca cct gtc ccg cct ccc ccc agc tca gga gag gct gtg     1614
Gly Pro Phe Pro Pro Val Pro Pro Pro Ser Ser Gly Glu Ala Val
              390                    395                    400


gct cct cca tcc acc agt gca gca gcc ctt tct cgg ccc agt gga gca     1662
Ala Pro Pro Ser Thr Ser Ala Ala Ala Leu Ser Arg Pro Ser Gly Ala
405                    410                    415                    420


gct aca acc aca gct gct ggc acc agt gct act gct gct tct gcc aca     1710
Ala Thr Thr Thr Ala Ala Gly Thr Ser Ala Thr Ala Ala Ser Ala Thr
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gca tct ggc cca ggc tct ggc tct gcc cca gag gct ggc cct gcc cct     1758
Ala Ser Gly Pro Gly Ser Gly Ser Ala Pro Glu Ala Gly Pro Ala Pro
              440                    445                    450

ggt ttc ccc ttc cct cct ccc tgg atg ggt atg ccc ctg cct cca ccc    1806
Gly Phe Pro Phe Pro Pro Pro Trp Met Gly Met Pro Leu Pro Pro Pro
        455                 460                 465


ttt gcc ttc ccc cca atg cct gtg ccc cct gcg ggc ttt gct ggg ctg    1854
Phe Ala Phe Pro Pro Met Pro Val Pro Pro Ala Gly Phe Ala Gly Leu
    470                 475                 480


acc cca gag gag cta cga gct ctg gag ggc cat gag cgg cag cac ctg    1902
Thr Pro Glu Glu Leu Arg Ala Leu Glu Gly His Glu Arg Gln His Leu
485                 490                 495                 500


gag gcc cgg ctg cag agc ctg cgt aac atc cac aca ctg ctg gac gcc    1950
Glu Ala Arg Leu Gln Ser Leu Arg Asn Ile His Thr Leu Leu Asp Ala
            505                 510                 515


gcc atg ctg cag atc aac cag tac ctc acc gtg ctg gcc tcc ttg ggg    1998
Ala Met Leu Gln Ile Asn Gln Tyr Leu Thr Val Leu Ala Ser Leu Gly
        520                 525                 530


ccc ccc cgg cct gcc act tca gtc aac tcc act gag ggg act gcc act    2046
Pro Pro Arg Pro Ala Thr Ser Val Asn Ser Thr Glu Gly Thr Ala Thr
        535                 540                 545


aca gtt gtt gct gct gcc tcc tcc acc agc atc cct agc tca gag gcc    2094
Thr Val Val Ala Ala Ala Ser Ser Thr Ser Ile Pro Ser Ser Glu Ala

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            550                    555                    560


acg acc cca acc cca gga gcc tcc cca cca gcc cct gaa atg gaa agg    2142
Thr Thr Pro Thr Pro Gly Ala Ser Pro Pro Ala Pro Glu Met Glu Arg
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cct cca gct cct gag tca gtg ggc aca gag gag atg cct gag gat gga    2190
Pro Pro Ala Pro Glu Ser Val Gly Thr Glu Glu Met Pro Glu Asp Gly
                   585                    590                    595


gag ccc gat gca gca gag ctc cgc cgg cgc cgc ctg cag aag ctg gag    2238
Glu Pro Asp Ala Ala Glu Leu Arg Arg Arg Arg Leu Gln Lys Leu Glu
              600                    605                    610


tct cct gtt gcc cac tga cactgcccca gcccagcccc agcctctgct           2286
Ser Pro Val Ala His
         615


cttttgagca gccctcgctg gaacatgtcc tgccaccaag tgccagctcc ctctctgtct 2346


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cccgggaaag aggaacagga gtgccagact cctggtcttt ccagtttaga aaaggctctg 3186

tgccaaggag ggaccacagg agctgggacc tgcctgcccc tgtcctttcc ccttggtttt 3246

gtgttacaag agttgttgga gacagtttca gatgattatt taatttgtaa atattgtaca 3306

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<213> Homo sapiens

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                20                  25                  30

Val Val Tyr Leu Thr Lys Ser Ser Pro Ser Met Ala Val Leu Tyr Ile
        35                  40                  45

Gln Ala Phe Val Leu Val Phe Leu Leu Gly Lys Val Met Gly Lys Val
        50                  55                  60

Phe Phe Gly Gln Leu Arg Ala Ala Glu Met Glu His Leu Leu Glu Arg
65                  70                  75                  80

Ser Trp Tyr Ala Val Thr Glu Thr Cys Leu Ala Phe Thr Val Phe Arg
              85               90               95

Asp Asp Phe Ser Pro Arg Phe Val Ala Leu Phe Thr Leu Leu Leu Phe
             100           105          110

Leu Lys Cys Phe His Trp Leu Ala Glu Asp Arg Val Asp Phe Met Glu
             115           120          125

Arg Ser Pro Asn Ile Ser Trp Leu Phe His Cys Arg Ile Val Ser Leu
             130           135          140

Met Phe Leu Leu Gly Ile Leu Asp Phe Leu Phe Val Ser His Ala Tyr
145              150          155          160

His Ser Ile Leu Thr Arg Gly Ala Ser Val Gln Leu Val Phe Gly Phe
             165           170          175

Glu Tyr Ala Ile Leu Met Thr Met Val Leu Thr Ile Phe Ile Lys Tyr
             180           185          190

Val Leu His Ser Val Asp Leu Gln Ser Glu Asn Pro Trp Asp Asn Lys
             195           200          205

Ala Val Tyr Met Leu Tyr Thr Glu Leu Phe Thr Gly Phe Ile Lys Val
             210           215          220

Leu Leu Tyr Met Ala Phe Met Thr Ile Met Ile Lys Val His Thr Phe
225             230             235             240

Pro Leu Phe Ala Ile Arg Pro Met Tyr Leu Ala Met Arg Gln Phe Lys
                245             250             255

Lys Ala Val Thr Asp Ala Ile Met Ser Arg Arg Ala Ile Arg Asn Met
                260             265             270

Asn Thr Leu Tyr Pro Asp Ala Thr Pro Glu Glu Leu Gln Ala Met Asp
                275             280             285

Asn Val Cys Ile Ile Cys Arg Glu Glu Met Val Thr Gly Ala Lys Arg
        290             295             300

Leu Pro Cys Asn His Ile Phe His Thr Ser Cys Leu Arg Ser Trp Phe
305             310             315             320

Gln Arg Gln Gln Thr Cys Pro Thr Cys Arg Met Asp Val Leu Arg Ala
                325             330             335

Ser Leu Pro Ala Gln Ser Pro Pro Pro Glu Pro Ala Asp Gln Gly
                340             345             350

Pro Pro Pro Ala Pro His Pro Pro Pro Leu Leu Pro Gln Pro Pro Asn

                355                    360                    365


Phe Pro Gln Gly Leu Leu Pro Pro Phe Pro Pro Gly Met Phe Pro Leu
                370                    375              380


Trp Pro Pro Met Gly Pro Phe Pro Pro Val Pro Pro Pro Ser Ser
385                    390                    395                    400


Gly Glu Ala Val Ala Pro Pro Ser Thr Ser Ala Ala Ala Leu Ser Arg
                         405                    410                    415


Pro Ser Gly Ala Ala Thr Thr Thr Ala Ala Gly Thr Ser Ala Thr Ala
                         420                    425                    430


Ala Ser Ala Thr Ala Ser Gly Pro Gly Ser Gly Ser Ala Pro Glu Ala
                         435                    440                    445


Gly Pro Ala Pro Gly Phe Pro Phe Pro Pro Trp Met Gly Met Pro
                450                    455                    460


Leu Pro Pro Pro Phe Ala Phe Pro Pro Met Pro Val Pro Pro Ala Gly
465                    470                    475                    480


Phe Ala Gly Leu Thr Pro Glu Glu Leu Arg Ala Leu Glu Gly His Glu
                         485                    490                    495

Arg Gln His Leu Glu Ala Arg Leu Gln Ser Leu Arg Asn Ile His Thr
            500                 505                 510

Leu Leu Asp Ala Ala Met Leu Gln Ile Asn Gln Tyr Leu Thr Val Leu
            515                 520                 525

Ala Ser Leu Gly Pro Pro Arg Pro Ala Thr Ser Val Asn Ser Thr Glu
            530                 535                 540

Gly Thr Ala Thr Thr Val Val Ala Ala Ala Ser Ser Thr Ser Ile Pro
545                 550                 555                 560

Ser Ser Glu Ala Thr Thr Pro Thr Pro Gly Ala Ser Pro Pro Ala Pro
                565                 570                 575

Glu Met Glu Arg Pro Pro Ala Pro Glu Ser Val Gly Thr Glu Glu Met
            580                 585                 590

Pro Glu Asp Gly Glu Pro Asp Ala Ala Glu Leu Arg Arg Arg Arg Leu
            595                 600                 605

Gln Lys Leu Glu Ser Pro Val Ala His
        610                 615

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Met Phe Arg Thr Ala Val Met Met Ala Ala Ser Leu Ala Leu Thr Gly
1               5                   10                  15

gct gtg gtg gct cac gcc tac tac ctc aaa cac cag ttc tac ccc act    155
Ala Val Val Ala His Ala Tyr Tyr Leu Lys His Gln Phe Tyr Pro Thr
                20                  25                  30

gtg gtg tac ctg acc aag tcc agc ccc agc atg gca gtc ctg tac atc    203
Val Val Tyr Leu Thr Lys Ser Ser Pro Ser Met Ala Val Leu Tyr Ile
            35                  40                  45

cag gcc ttt gtc ctt gtc ttc ctt ctg ggc aag gtg atg ggc aag gtg    251
Gln Ala Phe Val Leu Val Phe Leu Leu Gly Lys Val Met Gly Lys Val
        50                  55                  60

ttc ttt ggg caa ctg agg gca gca gag atg gag cac ctt ctg gaa cgt     299
Phe Phe Gly Gln Leu Arg Ala Ala Glu Met Glu His Leu Leu Glu Arg
 65                  70                  75                  80

tcc tgg tac gcc gtc aca gag act tgt ctg gcc ttc acc gtt ttt cgg     347
Ser Trp Tyr Ala Val Thr Glu Thr Cys Leu Ala Phe Thr Val Phe Arg
                    85                  90                  95

gat gac ttc agc ccc cgc ttt gtt gca ctc ttc act ctt ctt ctc ttc     395
Asp Asp Phe Ser Pro Arg Phe Val Ala Leu Phe Thr Leu Leu Leu Phe
                   100                 105                 110

ctc aaa tgt ttc cac tgg ctg gct gag gac cgt gtg gac ttt atg gaa     443
Leu Lys Cys Phe His Trp Leu Ala Glu Asp Arg Val Asp Phe Met Glu
                   115                 120                 125

cgc agc ccc aac atc tcc tgg ctc ttt cac tgc cgc att gtc tct ctt     491
Arg Ser Pro Asn Ile Ser Trp Leu Phe His Cys Arg Ile Val Ser Leu
                   130                 135                 140

atg ttc ctc ctg ggc atc ctg gac ttc ctc ttc gtc agc cac gcc tat     539
Met Phe Leu Leu Gly Ile Leu Asp Phe Leu Phe Val Ser His Ala Tyr
145                 150                 155                 160

cac agc atc ctg acc cgt ggg gcc tct gtg cag ctg gtg ttt ggc ttt     587

His Ser Ile Leu Thr Arg Gly Ala Ser Val Gln Leu Val Phe Gly Phe
                   165                   170             175


gag tat gcc atc ctg atg acg atg gtg ctc acc atc ttc atc aag tat   635
Glu Tyr Ala Ile Leu Met Thr Met Val Leu Thr Ile Phe Ile Lys Tyr
            180               185            190


gtg ctg cac tcc gtg gac ctc cag agt gag aac ccc tgg gac aac aag   683
Val Leu His Ser Val Asp Leu Gln Ser Glu Asn Pro Trp Asp Asn Lys
            195              200          205


gct gtg tac atg ctc tac aca gag ctg ttt aca ggc ttc atc aag gtt   731
Ala Val Tyr Met Leu Tyr Thr Glu Leu Phe Thr Gly Phe Ile Lys Val
       210            215           220


ctg ctg tac atg gcc ttc atg acc atc atg atc aag gtg cac acc ttc   779
Leu Leu Tyr Met Ala Phe Met Thr Ile Met Ile Lys Val His Thr Phe
225            230           235          240


cca ctc ttt gcc atc cgg ccc atg tac ctg gcc atg aga cag ttc aag   827
Pro Leu Phe Ala Ile Arg Pro Met Tyr Leu Ala Met Arg Gln Phe Lys
            245              250          255


aaa gct gtg aca gat gcc atc atg tct cgc cga gcc atc cgc aac atg   875
Lys Ala Val Thr Asp Ala Ile Met Ser Arg Arg Ala Ile Arg Asn Met
            260              265         270

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aac acc ctg tat cca gat gcc acc cca gag gag ctc cag gca atg gac    923
Asn Thr Leu Tyr Pro Asp Ala Thr Pro Glu Glu Leu Gln Ala Met Asp
        275               280               285


aat gtc tgc atc atc tgc cga gaa gag atg gtg act ggt gcc aag aga    971
Asn Val Cys Ile Ile Cys Arg Glu Glu Met Val Thr Gly Ala Lys Arg
        290               295               300


ctg ccc tgc aac cac att ttc cat acc agc tgc ctg cgc tcc tgg ttc   1019
Leu Pro Cys Asn His Ile Phe His Thr Ser Cys Leu Arg Ser Trp Phe
305               310               315               320


cag cgg cag cag acc tgc ccc acc tgc cgt atg gat gtc ctt cgt gca   1067
Gln Arg Gln Gln Thr Cys Pro Thr Cys Arg Met Asp Val Leu Arg Ala
                325               330               335


tcg ctg cca gcg cag tca cca cca ccc ccg gag cct gcg gat cag ggg   1115
Ser Leu Pro Ala Gln Ser Pro Pro Pro Glu Pro Ala Asp Gln Gly
        340               345               350


cca ccc cct gcc ccc cac ccc cca cca ctc ttg cct cag ccc ccc aac   1163
Pro Pro Pro Ala Pro His Pro Pro Pro Leu Leu Pro Gln Pro Pro Asn
        355               360               365


ttc ccc cag ggc ctc ctg cct cct ttt cct cca ggc atg ttc cca ctg   1211
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Phe Pro Gln Gly Leu Leu Pro Pro Phe Pro Pro Gly Met Phe Pro Leu

370                375                380


tgg ccc ccc atg ggc ccc ttt cca cct gtc ccg cct ccc ccc agc tca    1259

Trp Pro Pro Met Gly Pro Phe Pro Pro Val Pro Pro Pro Ser Ser

385                390                395                400


gga gag gct gtg gct cct cca tcc acc agt gca gcc ctt tct cgg ccc    1307

Gly Glu Ala Val Ala Pro Pro Ser Thr Ser Ala Ala Leu Ser Arg Pro

                405                410                415


agt gga gca gct aca acc aca gct gct ggc acc agt gct act gct gct    1355

Ser Gly Ala Ala Thr Thr Thr Ala Ala Gly Thr Ser Ala Thr Ala Ala

                420                425                430


tct gcc aca gca tct ggc cca ggc tct ggc tct gcc cca gag gct ggc    1403

Ser Ala Thr Ala Ser Gly Pro Gly Ser Gly Ser Ala Pro Glu Ala Gly

                435                440                445


cct gcc cct ggt ttc ccc ttc cct cct ccc tgg atg ggt atg ccc ctg    1451

Pro Ala Pro Gly Phe Pro Phe Pro Pro Pro Trp Met Gly Met Pro Leu

450                455                460


cct cca ccc ttt gcc ttc ccc cca atg cct gtg ccc cct gcg ggc ttt    1499

Pro Pro Pro Phe Ala Phe Pro Pro Met Pro Val Pro Pro Ala Gly Phe

465                470                475                480

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gct ggg ctg acc cca gag gag cta cga gct ctg gag ggc cat gag cgg    1547
Ala Gly Leu Thr Pro Glu Glu Leu Arg Ala Leu Glu Gly His Glu Arg
                485                 490                 495


cag cac ctg gag gcc cgg ctg cag agc ctg cgt aac atc cac aca ctg    1595
Gln His Leu Glu Ala Arg Leu Gln Ser Leu Arg Asn Ile His Thr Leu
                500                 505                 510


ctg gac gcc gcc atg ctg cag atc aac cag tac ctc acc gtg ctg gcc    1643
Leu Asp Ala Ala Met Leu Gln Ile Asn Gln Tyr Leu Thr Val Leu Ala
                515                 520                 525


tcc ttg ggg ccc ccc cgg cct gcc act tca gtc aac tcc act gag ggg    1691
Ser Leu Gly Pro Pro Arg Pro Ala Thr Ser Val Asn Ser Thr Glu Gly
                530                 535                 540


act gcc act aca gtt gtt gct gct gcc tcc tcc acc agc atc cct agc    1739
Thr Ala Thr Thr Val Val Ala Ala Ala Ser Ser Thr Ser Ile Pro Ser
545                 550                 555                 560


tca gag gcc acg acc cca acc cca gga gcc tcc cca cca gcc cct gaa    1787
Ser Glu Ala Thr Thr Pro Thr Pro Gly Ala Ser Pro Pro Ala Pro Glu
                565                 570                 575


atg gaa agg cct cca gct cct gag tca gtg ggc aca gag gag atg cct    1835
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Met Glu Arg Pro Pro Ala Pro Glu Ser Val Gly Thr Glu Glu Met Pro
       580            585          590


gag gat gga gag ccc gat gca gca gag ctc cgc cgg cgc cgc ctg cag    1883
Glu Asp Gly Glu Pro Asp Ala Ala Glu Leu Arg Arg Arg Arg Leu Gln
      595          600          605


aag ctg gag tct cct gtt gcc cac tga cactgcccca gcccagcccc    1930
Lys Leu Glu Ser Pro Val Ala His
    610          615


agcctctgct cttttgagca gccctcgctg gaacatgtcc tgccaccaag tgccagctcc  1990


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agctcccgtt cccaagtgtg gactccagag gggctggagg caagctatga acttgctcgc  2350


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ccttggtttt gtgttacaag agttgttgga gacagtttca gatgattatt taatttgtaa 2950


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<212> PRT

<213> Homo sapiens


<400> 4

Met Phe Arg Thr Ala Val Met Met Ala Ala Ser Leu Ala Leu Thr Gly
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Ala Val Val Ala His Ala Tyr Tyr Leu Lys His Gln Phe Tyr Pro Thr
                20                  25                  30


Val Val Tyr Leu Thr Lys Ser Ser Pro Ser Met Ala Val Leu Tyr Ile
            35                  40                  45


Gln Ala Phe Val Leu Val Phe Leu Leu Gly Lys Val Met Gly Lys Val
        50                  55                  60


Phe Phe Gly Gln Leu Arg Ala Ala Glu Met Glu His Leu Leu Glu Arg
65                  70                  75                  80


Ser Trp Tyr Ala Val Thr Glu Thr Cys Leu Ala Phe Thr Val Phe Arg
                85                  90                  95


Asp Asp Phe Ser Pro Arg Phe Val Ala Leu Phe Thr Leu Leu Leu Phe
                100                 105                 110


Leu Lys Cys Phe His Trp Leu Ala Glu Asp Arg Val Asp Phe Met Glu

                115                    120                    125

Arg Ser Pro Asn Ile Ser Trp Leu Phe His Cys Arg Ile Val Ser Leu
        130                    135                    140

Met Phe Leu Leu Gly Ile Leu Asp Phe Leu Phe Val Ser His Ala Tyr
145                    150                    155                    160

His Ser Ile Leu Thr Arg Gly Ala Ser Val Gln Leu Val Phe Gly Phe
                165                    170                    175

Glu Tyr Ala Ile Leu Met Thr Met Val Leu Thr Ile Phe Ile Lys Tyr
                    180                    185                    190

Val Leu His Ser Val Asp Leu Gln Ser Glu Asn Pro Trp Asp Asn Lys
            195                    200                    205

Ala Val Tyr Met Leu Tyr Thr Glu Leu Phe Thr Gly Phe Ile Lys Val
        210                    215                    220

Leu Leu Tyr Met Ala Phe Met Thr Ile Met Ile Lys Val His Thr Phe
225                    230                    235                    240

Pro Leu Phe Ala Ile Arg Pro Met Tyr Leu Ala Met Arg Gln Phe Lys
                    245                    250                    255

Lys Ala Val Thr Asp Ala Ile Met Ser Arg Arg Ala Ile Arg Asn Met
           260                  265               270

Asn Thr Leu Tyr Pro Asp Ala Thr Pro Glu Glu Leu Gln Ala Met Asp
           275                  280               285

Asn Val Cys Ile Ile Cys Arg Glu Glu Met Val Thr Gly Ala Lys Arg
           290                  295               300

Leu Pro Cys Asn His Ile Phe His Thr Ser Cys Leu Arg Ser Trp Phe
305                310              315              320

Gln Arg Gln Gln Thr Cys Pro Thr Cys Arg Met Asp Val Leu Arg Ala
           325                  330               335

Ser Leu Pro Ala Gln Ser Pro Pro Pro Glu Pro Ala Asp Gln Gly
           340                  345               350

Pro Pro Pro Ala Pro His Pro Pro Pro Leu Leu Pro Gln Pro Pro Asn
           355                  360               365

Phe Pro Gln Gly Leu Leu Pro Pro Phe Pro Pro Gly Met Phe Pro Leu
           370                  375               380

Trp Pro Pro Met Gly Pro Phe Pro Pro Val Pro Pro Pro Pro Ser Ser
385                390              395              400

Gly Glu Ala Val Ala Pro Pro Ser Thr Ser Ala Ala Leu Ser Arg Pro
     405      410     415


Ser Gly Ala Ala Thr Thr Thr Ala Ala Gly Thr Ser Ala Thr Ala Ala
     420      425     430


Ser Ala Thr Ala Ser Gly Pro Gly Ser Gly Ser Ala Pro Glu Ala Gly
     435      440     445


Pro Ala Pro Gly Phe Pro Phe Pro Pro Pro Trp Met Gly Met Pro Leu
     450      455     460


Pro Pro Pro Phe Ala Phe Pro Pro Met Pro Val Pro Pro Ala Gly Phe
465      470      475     480


Ala Gly Leu Thr Pro Glu Glu Leu Arg Ala Leu Glu Gly His Glu Arg
     485      490     495


Gln His Leu Glu Ala Arg Leu Gln Ser Leu Arg Asn Ile His Thr Leu
     500      505     510


Leu Asp Ala Ala Met Leu Gln Ile Asn Gln Tyr Leu Thr Val Leu Ala
     515      520     525


Ser Leu Gly Pro Pro Arg Pro Ala Thr Ser Val Asn Ser Thr Glu Gly

     530            535            540

Thr Ala Thr Thr Val Val Ala Ala Ala Ser Ser Thr Ser Ile Pro Ser
545           550           555           560

Ser Glu Ala Thr Thr Pro Thr Pro Gly Ala Ser Pro Pro Ala Pro Glu
          565          570          575

Met Glu Arg Pro Pro Ala Pro Glu Ser Val Gly Thr Glu Glu Met Pro
          580          585          590

Glu Asp Gly Glu Pro Asp Ala Ala Glu Leu Arg Arg Arg Arg Leu Gln
          595          600          605

Lys Leu Glu Ser Pro Val Ala His
          610          615